SDSU Extension

iGrow Wheat

BEST MANAGEMENT PRACTICES

Chapter 24:
Weed Identification

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This chapter is the first of three that discusses weed identification (Chapter 24), targeted weed control strategies (Chapter 25), and herbicide injury symptoms (Chapter 26). The objective of this chapter is to provide guidance for identifying weeds found in South Dakota wheat fields.

Introduction

Without proper identification, weed control practices and herbicide recommendations may not provide expected results. Small (young) weeds, which are difficult to identify, are controlled more easily with less herbicide than larger, more well-established weeds. Control strategies should consider the weed species, chemicals, and crop rotations. For example, winter wheat is often more competitive with spring-emerging weeds than spring wheat. If emerged weeds are present at planting for either winter or spring wheat, they should be controlled as soon as possible.

Weeds can have multiple impacts on wheat that include reduced yields and diminished quality. If immature weeds are present at harvest, post-harvest control measures should be undertaken to insure that additional weed seeds are not added to the soil. Perennial weed control should be undertaken first, in early summer prior to flowering, and, then again, in fall, after the first light frost to help control growth from perennating organs. Weeds observed in South Dakota fields can be classified as grasses or broadleaf plants.

Grass Weeds	Broadleaf Weeds
wild oat	wild buckwheat
longspine sandbur	horseweed
downy brome	common sunflower
Japanese brome	common cocklebur
cheat	Russian thistle
jointed goatgrass	redroot pigweed
barnyardgrass	common waterhemp
wild proso millet	common lambsquarter
yello foxtail	kochia
green foxtail	Canada thistle
large crabgrass	field bindweed
witchgrass	wild mustard
switchgrass	field pennycress
annual and perennial ryegrass	prickly lettuce
volunteer rye	flixweed
	tansy mustard

Images and description of selected weeds are provided below.

Grass Weeds

Wild oat (Avena fatua)
Time of emergence: Wild oat typically emerges early; before or just after planting depending on soil temperature and moisture conditions.

Life cycle and reproduction: Annual, reproducing from seed.

Distinguishing characteristics: Large membraneous ligule, leaf blade margins with long hairs, leaves twist counter-clockwise, bunch grass. Typically occurs in localized areas.

Figure 24.1. Mature wild oat.
(Photo courtesy of Mike Moechnig, SDSU)

Yield loss potential: One wild oat per ft² may result in yield losses up to 10%.

Herbicide resistance: South Dakota biotypes that are resistant to ACCase inhibitors such as fenoxaprop have been identified. Across the United States, biotypes resistant to dinitroaniline (e.g., Treflan®); imidializone and sulfonylurea (ALS inhibitors); and thiocarbamates (e.g., EPTC) have been identified.

Wild oat ligule and plant descriptions available online at www.ipm.ucdavis.edu/PMG/WEEDS/wild_oat.html

Longspine sandbur (Cenchrus longispinus)
Time of emergence: Longspine sandbur is a non-native, warm-season grass emerging after planting.

Life cycle and reproduction: Annual, reproduces from seed.

Distinguishing characteristics: Sandbur has flattened stems with hairs, leaves may be rough to the touch. The plant has a short fringed hairy ligule. Seeds are enclosed in sharp, spiny, hairy burs that give the plant its name. Generally found in sandy soils, although it may also be found in clay loam soils.

Yield loss potential: Yield loss is often low; however, the plant is a nuisance plant due to sharp burs.

Herbicide resistance: None has been reported.

Figure 24.2. Longspine sandbur. (Photos courtesy of Mike Moechnig, SDSU)

Downy brome (Bromus tectorum) (cheatgrass)
Time of emergence: Downy brome typically emerges after winter wheat seeding in the fall and occasionally in early spring.

Life cycle and reproduction: It is an annual that reproduces from seed.

Distinguishing characteristics: Leaves and sheathes are softly hairy. Ligule is rounded and may be toothed. It has long awns on the seed and a drooping panicle with many branches. The plant dries early in the summer. It is more common in crop land than the other brome species.

Yield loss potential: One plant per ft2 can reduce yields 30%, while heavy infestations can reduce yields up to 80%.

Herbicide resistance: Biotypes in the U.S. are resistant to lipid synthesis (ACCase inhibitors) or ALS inhibitors (imidializone and sulfonylurea). Around the world, biotypes are resistant to urea-type herbicides and photosystem II inhibitors.

Additional information about this weed is available at http://msuextension.org/publications/AgandNaturalResources/MT200811AG.pdf

Figure 24.3. Downy brome (Photos courtesy of Mike Moechnig, SDSU)

Japanese brome (Bromus japonicus)
Time of emergence: Winter annual, germinates late fall, remains vegetative until spring.

Life cycle and reproduction: Annual, reproducing from seed.

Distinguishing characteristics: Leaf sheath is hairy while the blade is hairless. It has short awns on the seed and a more upright seed head than downy brome. Although Japanese brome may be found in crop fields, it is often more common in rangeland.

Yield loss potential: No specific information is available.

Herbicide resistance: U.S. biotypes are resistant to herbicides with ALS-inhibitor mode of action (imidializone and sulfonylurea).

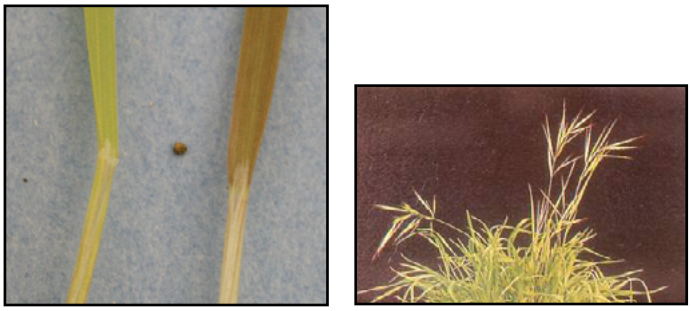

Figure 24.4. Mature Japanese brome.
(Photo courtesy of Pacific Northwest Weed Management Handbook and http://mining.state.co.us/pdfFiles/DownyBromeandJapanesebrometechnicalbulletinGBeckCSUDec092.pdf)

Cheat (Bromus secalinis)
Time of emergence: Cheat typically emerges in the fall or early spring; before or just after planting depending on soil temperature and moisture conditions. Cheat initiates its reproductive growth in mid-March, flowers and sets seed in May, and finally matures in early June.

Life cycle and reproduction: Annual, reproducing from seed.

Distinguishing characteristics: Ligule is rounded and may be toothed. It has short awns on the seed and typically occurs in localized areas, prefers dry soil conditions. Although downy brome and Japanese brome are often referred to as "cheatgrass," true cheat is generally not common in South Dakota.

Figure 24.5. Ligule.
(Photo courtesy of http://wiki.bugwood.org/HPIPM: Cheat) and **Mature Cheat.** (Photo courtesy of Pacific Northwest Weed Management Handbook)

Yield loss potential: 25 plants per ft^2 may result in 30 to 40% yield loss. Dockage may occur when infested wheat is marketed.

Herbicide resistance: U.S. biotypes are resistant to herbicides with ALS-inhibitor mode of action (imidializone and sulfonylurea).

Jointed goatgrass (Aegilops cylindrica)
Time of emergence: Jointed goatgrass typically emerges in the fall or early spring.

Life cycle and reproduction: Annual, reproducing from seed.

Distinguishing characteristics: Jointed goatgrass has long visible hairs along the blade and leaf sheath and unlike wheat, has reduced auricles. At heading, the inflorescence of jointed goatgrass is a cylindrical spike that has many joints. Each joint can contain up to three seeds. Spikelets that are harvested with wheat look like straw contamination; however, wheat straw is hollow and the goatgrass spikelet will be solid.

Yield loss potential: 2 plants ft^2 has been shown to reduce yields up to 30%, if winter wheat and jointed goatgrass emerge at the same time. In addition, infested wheat grain delivered to an elevator is discounted for dockage.

Herbicide resistance: No resistant biotypes have been reported. http://www.jointedgoatgrass.org/

Figure 24.6. Wheat Jointed goatgrass and Jointed goatgrass with wheat seed.
(Photos courtesy of Steve Dewey, Utah State University, Bugwood.org and Phil Westra, Colorado State University, Bugwood.org)

Barnyardgrass (Echinochloa crus-galli)
Time of emergence: Barnyardgrass is a warm-season grass emerging midseason after spring wheat planting.

Life cycle and reproduction: Annual, reproduces by seed.

Distinguishing characteristics: This grass has flattened, smooth, and branched stems without an auricle or ligule. This grass has broad leaves and typically is reddish or purple at the base of the plant. Barnyardgrass size can vary from 2 inches to over 4 feet tall. Larger plants are found around field edges or in areas with poor canopy cover. Found in wetter areas of the field.

Yield loss potential: Yield loss is often low.

Herbicide resistance: U.S. biotypes are resistant to photosynthetic inhibitors (e.g., atrazine), and the ACCase lipid synthesis inhibitors (e.g., sethoxydim).

Figure 24.7. Barnyardgrass. (Photo courtesy of Mike Moechnig, SDSU)

Wild proso millet (Panicum miliaceum)
Time of emergence: Wild proso millet is a warm-season grass that typically emerges late in the season, after spring wheat emergence.

Life cycle and reproduction: Annual reproducing by seed.

Distinguishing characteristics: This warm-season grass has a round stem with membranous ligule tipped with a fringe of hair. Seedlings look like corn but are hairy. Leaf blades are flat. Hairs may or may not be on the blade and sheath, but hairs are present at nodes. This grass can grow up to 6 ft tall. Seeds large, shiny, and white, green striped, olive brown, or black and often remain on the root of seedlings, which helps in identification. Nonblack seeds in soil are usually not viable after two seasons; black seeds have been reported to remain viable for up to 4 years. It tolerates sandy, dry soils and high temperatures.

Yield loss potential: Yield loss is moderate to high.

Herbicide resistance: None noted at this time.

Figure 24.8. Wild Proso Millet. (Photos courtesy of Steve Dewey, Utah State University, Bugwood.org)

Yellow foxtail (Setaria pumila syn. S. glauca) and Green foxtail (S. viridis)
Time of emergence: Yellow and green foxtails emerge toward the end of spring wheat planting.

Life cycle and reproduction: Annuals reproducing by seed.

Distinguishing characteristics: Yellow and green foxtails infest most eastern South Dakota fields. Yellow foxtail has long yellow hairs near the ligule, a flattened stem, and large seeds. Green foxtail has no to few hairs on the leaf blade, a round stem, and small seeds.

Yield loss potential: In wheat, green foxtail populations of 38 per ft² can reduce yields from 14 to 62%.

Herbicide resistance: Yellow foxtail biotypes have been reported to be resistant to ALS and photosynthetic herbicides. Green foxtail biotypes have been reported to be resistant to dinitroanailine (trifluralin), ALS, lipid synthesis inhibitors (ACCase), and photosynthetic inhibitor herbicides.

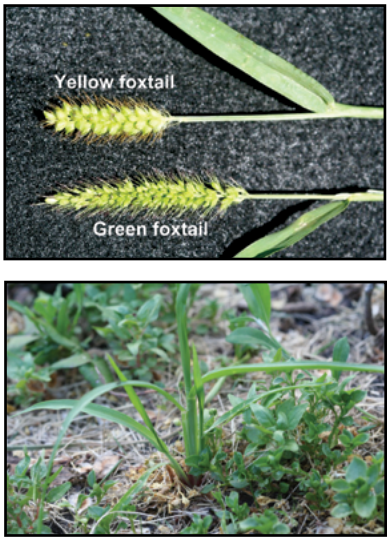

Figure 24.9. Yellow foxtail and green foxtail; young plant. (Photos courtesy Mike Moechnig, SDSU)

Large crabgrass (Digitaria sanguinalis)
Time of emergence: Large crabgrass is a warm season grass that emerges after spring wheat has emerged.

Life cycle and reproduction: Annual plant that reproduces by seed.

Distinguishing characteristics: Hairs are found everywhere on large crabgrass; it has a flattened stem, membranous ligule, and a seedhead that has finger-like spikes. This grass can grow from 6" to 2 ft tall.

Yield loss potential: Low even at high densities.

Herbicide resistance: Biotypes in Wisconsin have been reported to be resistance to the ACCase lipid synthesis inhibitor (e.g., sethoxydim) herbicides. In South Dakota, biotypes resistant to typical wheat herbicides have not been reported.

Figure 24.10. Large crabgrass. (Photos courtesy Mike Moechnig,SDSU)

Witchgrass (Panicum capillare)
Time of emergence: Witchgrass is a warm-season grass that emerges after spring wheat emergence.

Life cycle and reproduction: Annual, reproducing by seed.

Distinguishing characteristics: Witchgrass has a flat stem with long soft hairs covering most of the plant. The ligule is a fringe of hair. Panicles are an open inflorescence, spreading, hairy, and large. When mature, the panicle can break off and tumble along the ground.

Areas of infestation: Grows well in sandy, droughty soil.

Yield loss potential: Low, even at high densities.

Herbicide resistance: A biotype resistant to photosynthetic type herbicides (e.g., atrazine) has been observed in Canada.

Figure 24.11. Witchgrass.
(Photos courtesy of Howard F. Schwartz, Colorado State University, Bugwood.org and Steve Dewey, Utah State University, Bugwood.org)

Switchgrass (Panicum virgatum)
Time of emergence: Switchgrass is a warm-season grass that emerges after spring wheat has emerged.

Life cycle and reproduction: This perennial reproduces by rhizomes and seed. Vegetative stems are sometimes confused with witchgrass.

Distinguishing characteristics: There is a V-shaped patch of hair on the upper leaf surface near the stem. Plants can grow up to 6 ft tall. Switchgrass has been grown in CRP lands and is being examined as a biofuel crop, but escaped plants can be problematic.

Areas of infestation: Switchgrass grows well in sandy or droughty soil types.

Yield loss potential: Moderate.

Herbicide resistance: No resistance to typical wheat herbicides have been reported.

Figure 24.12. Switchgrass. (Photo courtesy of James H. Miller and Ted Bodner, Southern Weed Science Society, Bugwood.org)

Annual (Italian) and perennial ryegrass (Lolium multiflorum and L. perenne)
Time of emergence: Annual ryegrass is a cool-season grass emerging in early spring before or at spring wheat planting.

Life cycle and reproduction: Annual ryegrass is a bunchtype grass that reproduces by seed only. Perennial ryegrass can reproduce by seed and rhizomes.

Distinguishing characteristics: Leaves are dark green. Annual ryegrass has long clasping auricles that wrap around the stem. Seeds of annual ryegrass have long awns. Perennial ryegrass has short nonclasping auricles and seeds are awnless.

Areas of infestation: Often grows and thrives in moist soils and can withstand temporary flooding better than cereals.

Figure 24.13. Italian (or annual) ryegrass spike. (Photo courtesy of Barry Rice, sarracenia.com, Bugwood.org)

Yield loss potential: Populations exceeding 20 plants/ft^2 can reduce wheat yields from 20 to 50%. Some wheat varieties have been shown to reduce ryegrass growth due to chemical exudates (allelopathy) from roots or decaying leaf tissue.

Herbicide resistance: Biotypes of Lolium mulitiflorum are resistant to ACCase inhibitors such as diclofop (HoelonR). Biotypes of Lolium rigidum have been reported to be resistant to glyphosate, ACCase inhibitors, and ALS (both sulfonylurea and imidiazilinone type) inhibitors.

Other species: Rigid ryegrass (Lolium rigidum) and others. Identification information can be found online at University of Arkansas website Ryegrass Identification Keys: http://www.uaex.edu/Other_Areas/publications/PDF/FSA-2149.pdf

Volunteer (or feral) Rye (Secale cereale)
Time of emergence: Volunteer rye is a winter annual that emerges in the late fall or early spring.

Life cycle and reproduction: Annual plant that reproduces by seed.

Distinguishing characteristics: Its bluish green leaves are coarser than wheat and it has a short membranous ligule. Auricles are narrow and wither away as the season progresses compared to wheat auricles, which are present throughout the season. The seed head of rye will nod, whereas wheat remains upright. Images of seedling wheat compared with seedling rye can be found at http://new.dpi.vic.gov.au/agriculture/grain-crops/crop-production/identifying-cereal-seedlings

Areas of infestation: Often grown as a cover crop or in pastures, planted rye can escape and cause problems as it has dormant seed that can survive many disturbances.

Yield loss potential: Often interferes with winter wheat production. The presence of rye seeds in wheat grain often results in dockage, grain grade reduction, and quality losses. In Colorado, 5 plts/ft^2 resulted in 14% wheat yield loss, and, in Oregon, if left until harvest, a 69% yield reduction was reported with 18 plts/ft^2.

Herbicide resistance: Not truly herbicide resistant; however, controlling volunteer rye in wheat can be problematic. Online information about managing volunteer rye infestations in winter wheat can be found at: http://www.wintercereals.us/Documents/Growing%20WW/Production%20Articles/Weeds/Rye%20Control%20in%20Winter%20Wheat.pdf

Figure 24.14. Feral rye in wheat. (Photos courtesy of Drew Lyon, UNL)

Broadleaf Weeds

Wild buckwheat (Polygonum convolvulus)
Time of emergence: Wild buckwheat typically emerges before or at planting of spring wheat. Later summer flushes may occur depending on soil temperature and moisture conditions.

Life cycle and reproduction: Annual vining broadleaf that reproduces by seed.

Distinguishing characteristics: An ocrea (white to brown sheath) is located at the base of the leaf on the stem. This plant is often confused with the perennial field bindweed and is known as black bindweed in other regions. Unlike field bindweed, wild buckwheat has triangular seeds, an ocrea, very small inconspicuous flowers, pointed leaf tips, and a fiberous root structure. Wet areas of fields are more likely to have infestations.

Yield loss potential: Yield losses can be as high as 30%. Low densities may not reduce yield; however, the vines twining up wheat plants may become tangled in harvest equipment. If mixed with wheat, the high water content of wild buckwheat seeds may cause spoilage in stored grain.

Herbicide resistance: No resistance reported, but difficult to control with glyphosate or 2,4-D.

Figure 24.15. Wild buckwheat. (Photos courtesy of Mike Moechnig, SDSU)

Horseweed or marestail (Conyza canadensis)
Time of emergence: Horseweed may emerge in fall in winter wheat, overwinter as a rosette, and bolt in the spring or emerge in the spring at or before spring wheat planting.

Life cycle and reproduction: This winter or summer annual reproduces from seed.

Distinguishing characteristics: The plant has numerous linear, hairy (although some plants have few or no hairs) leaves crowded on the stem. It is tolerant of drought conditions. The flowers are very small and are generally white.

Yield loss potential: Historically, this weed has seldom been dense enough to warrant control and is generally not highly competitive with wheat. However, at high densities yield losses of >80% have been reported in soybean.

Herbicide resistance: There are biotypes resistant to photosynthetic inhibitors (atrazine), glyphosate, ALS inhibitors, and paraquat. Rotating herbicides or other control methods is necessary to minimize selection of herbicide resistant biotypes.

Figure 24.16. Horseweed. (Photos courtesy of Mike Moechnig, SDSU)

Common sunflower (Helianthus annuus)
Time of emergence: Common sunflower emerges at or just after spring wheat planting.

Life cycle and reproduction: Annual, reproducing by seed.

Distinguishing characteristics: Cotyledons are oval with toothed margins on alternating leaves. Stems become multi-branched, covered with stiff hairs as the plant matures and has characteristic yellow flowers. Infestations typically occur in drier soils.

Yield loss potential: Highly competitive with up to 70% yield reductions are observed at moderate density.

Herbicide resistance: Biotypes resistant to ALS-inhibitor herbicides have been reported.

Figure 24.17. Common sunflower. (Photos courtesy of Mike Moechnig, SDSU)

Common cocklebur (Xanthium strumarium)
Time of emergence: Common cocklebur typically emerges after spring wheat planting.

Life cycle and reproduction: Annual plant that reproduces by seed.

Distinguishing characteristics: Cotyledons of the seedling are linear, thick, and shiny green. Leaves are alternate and large with wavy margins. Seeds are in burs that stick to animal coats. This plant grows well in wet areas.

Yield loss potential: Highly competitive, causing up to 70% yield reductions at high density.

Herbicide resistance: Biotypes resistant to ALS-inhibitor herbicides have been reported in some Midwestern states.

Figure 24.18. Common cocklebur.
(Photos courtesy of Mike Moechnig, SDSU)

Russian thistle (Salsola iberica)
Time of emergence: Russian thistle emerges at or before spring wheat planting.

Life cycle and reproduction: Annual plant that reproduces by seed.

Distinguishing characteristics: Seedlings resemble small pine trees with threadlike leaves. Older plants become spine-like with the leaf surface from smooth to hairy with non-showy flowers. The entire plant breaks off at the base and disperses seed as it tumbles in the wind.

This drought- and salt-tolerant plant can be found in many areas.

Yield loss potential: Up to 50% yield reductions have been reported depending on density and time of emergence. If Russian thistle comes up even one week after the crop, wheat losses may not be measurable.

Herbicide resistance: Biotypes resistant to ALS-inhibitor herbicides have been observed.

Figure 24.19. Russian thistle. (Photos courtesy of Mike Moechnig, SDSU)

Redroot pigweed (Amaranthus retroflexus)
Time of emergence: Redroot pigweed typically emerges at or during spring wheat planting.

Life cycle and reproduction: Annual plant that reproduces by seed.

Distinguishing characteristics: Cotyledons are thin and linear. Leaves are lance-like with alternate arrangement. The lower surface is hairy. Stems are stout and the lower portion is reddish (hence the name redroot). Seeds are black, shiny, and numerous with a large plant producing over 800,000 seeds.

Plants may hybridize with other Amaranthus species (e.g., Palmer amaranth, common waterhemp, prostrate pigweed). This plant typically is found in disturbed areas usually with high fertility.

Yield loss potential: Up to 55% yield reductions reported depending on density.

Figure 24.20. Redroot pigweed. (Photos courtesy of Mike Moechnig, SDSU)

Herbicide resistance: Biotypes resistant to triazine and ALS-inhibitor herbicides have been reported.

Common waterhemp (Amaranthus rudis)

Time of emergence: Common waterhemp typically emerges late in the season after spring wheat emergence.

Life cycle and reproduction: Annual plant that reproduces by seed.

Distinguishing characteristics: The first true leaves of seedlings are more lance-like than the oval leaves seen on redroot pigweed. Leaf surfaces are not hairy. This plant has male and female plants. The inflorescence of the female plant is more highly branched than the inflorescence of the redroot pigweed. The female plant has been reported to produce over one million shiny black seeds. Found in disturbed areas with high fertility.

Yield loss potential: Up to 55% yield reductions reported depending on density.

Herbicide resistance: Biotypes have been reported to be resistant to ALS-inhibitors, triazine, glyphosate, and PPO type herbicides. Biotypes with multiple resistance (e.g., resistant to several different modes-of-action) also have been reported.

Figure 24.21. Common waterhemp. (Photos courtesy of Mike Moechnig, SDSU)

Common lambsquarters (Chenopodium album)

Time of emergence: Common lambsquarters typically emerges at or before spring wheat planting.

Life cycle and reproduction: Annual plant that reproduces by seed.

Distinguishing characteristics: Emerging plants are very small. Leaves are opposite and are covered with a mealy powder, especially on the underside. The stems are erect, may have green or red stripes and can grow to almost 6 ft tall under certain conditions. The flowers are nonshowy and without petals.

Yield loss potential: Up to 30% yield reductions reported depending on density.

Herbicide resistance: Biotypes have been reported to be resistant to ALS and photosynthesis inhibitors. Reduced sensitivity to glyphosate has been reported in some areas.

Figure 24.22. Common lambsquarters.
(Photos courtesy of Mike Moechnig, SDSU)

Kochia (Kochia scoparia)
Time of emergence: Kochia emerges at or before planting of spring wheat.

Life cycle and reproduction: Annual plant that reproduces by seed.

Distinguishing characteristics: Kochia seedlings can be very small with over 1,000 present in a 1 ft^2 area. Leaf margins are fringed with hair. Leaf surfaces range from being without hairs to very hairy. Wind-blown plants will disburse seed in the fall. Found in disturbed sites.

Yield loss potential: Yield losses of up to 40% have been reported.

Herbicide resistance: Some kochia biotypes are resistant to atrazine, ALS-inhibitors, and auxin (e.g., dicamba) herbicides. Most populations in South Dakota are resistant to ALS-inhibitors.

Figure 24.23. Kochia. (Photos courtesy of Mike Moechnig, SDSU)

Canada thistle (Cirsium arvense)
Time of emergence: Canada thistle typically emerges before or just at spring wheat planting.

Life cycle and reproduction: This perennial has deep extensive root systems and spreads by seeds or pieces of rhizome transported from one location to another on equipment.

Distinguishing characteristics: Emerging plants are very small. Leaves are opposite and small spines on the leaf margins. Canada thistle has both male and female plants. Plants are often seen in dense colonies. Found in disturbed sites.

Yield loss potential: Up to a 30% yield reduction have been reported with 4 shoots or more per ft^2.

Herbicide resistance: Some biotypes have been reported to be resistant to auxin-type herbicides.

Figure 24.24. Canada thistle. (Photos courtesy of Mike Moechnig, SDSU)

Field bindweed (Convolvulus arvensis)
Time of emergence: Field bindweed emerges in late spring to early summer.

Life cycle and reproduction: This perennial can grow from rhizomes or seed.

Distinguishing characteristics: Leaves are arrow-shaped on a twining stem. The root system can be extensive and deep-rooted. Flowers are white to pink and bell or trumpet shaped. It grows well in dry soils.

Yield loss potential: Yield losses up to 50% have been reported. Vining nature of the plant can cause problems with harvest equipment.

Figure 24.25. Field bindweed. (Photo courtesy of Mike Moechnig, SDSU)

Herbicide resistance: This plant may not be sensitive to glyphosate, particularly when applied in the spring. Some biotypes are resistant to auxin-type herbicides.

Wild mustard (Sinapsis arvensis syn. Brassica kaber)
Time of emergence: Wild mustard typically emerges before or at planting of spring wheat.

Life cycle and reproduction: Annual erect plant, reproducing by seed.

Distinguishing characteristics: Cotyledons (seed leaves) are kidney shaped. Leaves are alternate with hairs on the bottom of the leaf. Lower leaves are deeply lobed, whereas upper leaves are coarsely toothed. Flowers are yellow and seeds are found in a thin pod, known as a silique. Often found in disturbed sites.

Yield loss potential: 1 plant per ft^2 can reduce yields 10%. Populations of 4 per ft^2 can reduce yields 50%.

Herbicide resistance: Biotypes have been found to be resistant to ALS-inhibitor herbicides.

Figure 24.26. Wild mustard. (Photos courtesy of Mike Moechnig, SDSU)

Field pennycress (Thlaspi arvense)
Time of emergence: Field pennycress is a winter annual that may germinate in fall or early spring.

Life cycle and reproduction: Annual erect plant that reproduces by seed.

Distinguishing characteristics: Cotyledons (seed leaves) are oval or oblong. Young plant is a basal rosette (growth habit resembling a dandelion) with stem elongation during flower development. Young leaves are generally oval and without hair. Leaves on the elongated stem are narrow and lance-like, but with a toothed margin. Seeds are in silicles that have the penny-shaped appearance and give the plant its common name. A garlicky odor is produced when the plants are damaged.

Yield loss potential: It may not reduce yield but causes problems during harvest or dockage due to off flavor of grain.

Effective management: ALS herbicides in the sulfonylurea or imidiazlinone group, auxin-type herbicides such as 2,4-D and MCPA.

Herbicide resistance: Biotypes in the U.S. have been reported to be resistant to ALS-inhibitor herbicides.

Figure 24.27. Field pennycress. (Photos courtesy of Mike Moechnig, SDSU)

Prickly lettuce (Lactuca serriola)
Time of emergence: Prickly lettuce seed can germinate in the fall or spring.

Life cycle and reproduction: Depending on weather conditions, it can be an annual (1-yr cycle to produce seed) or biennial (first yr rosette only and second yr sets seed) plant, reproducing by seed that produces a plume to aid wind dispersal much like a dandelion.

Distinguishing characteristics: Cotyledons (seed leaves) are oval or oblong with spiny margins and spines along the midrib of the leaf. The young plant is a basal rosette (growth habit resembling a dandelion) with stem elongation during flower development. Plant exudes milky sap when cut. Leaves on the elongated stem are alternate and leaf bases clasp the stem. Flowers are yellow in color and petals have a toothed margin. Found in disturbed sites.

Yield loss potential: About 1 per ft^2 has been shown to reduce wheat yield by 15%.

Herbicide resistance: Biotypes of prickly lettuce that are resistant to ALS inhibitor herbicides and synthetic auxin (2,4-D type) have been reported in the U.S.

Figure 24.28. Prickly lettuce. (Photos courtesy of Mike Moechnig, SDSU)

Flixweed (Descurainia sophia)
Time of emergence: Flixweed seeds can germinate in fall or spring.

Figure 24.29. Flixweed. (Photos courtesy of John D. Byrd, Mississippi State University, Bugwood.org and Mary Ellen (Mel) Harte, Bugwood.org)

Life cycle and reproduction: Annual or biennial erect plant that reproduces by seed.

Distinguishing characteristics: Leaves are finely divided and pinnately compound, grayish-blue in color. Juvenile plants have ovate shaped leaves in a rosette arrangement, deeply lobed margins, and the leaves are covered in star-shaped hairs. Flower petals very small, yellow or greenish-yellow. Flixweed is distinguished from other mustards by its finely dissected leaves.

Yield loss potential: No specific information is available at this time.

Herbicide resistance: Biotypes of flixweed in Kansas winter wheat have been reported to be resistant to ALS-inhibitor herbicides (sulfonylurea and imidazolinone types) http://www.weedscience.org/Case/Case.asp?ResistID=5404

Tansymustard (Descurainia pinnata)
Time of emergence: Tansymustard is a winter annual weed that germinates in fall or spring.

Life cycle and reproduction: Generally a winter annual reproducing by seed.

Distinguishing characteristics: Leaves are finely divided and pinnately compound greener in color than flixweed. Juvenile plants have ovate shaped leaves in a rosette arrangement, deeply lobed margins, and the leaves are covered in star-shaped hairs. Flower petals very small, yellow or greenish-yellow and blooms earlier than flixweed. The fruits (pods) of tansymustard are siliques, the seeds are arranged in two rows, and are about ½ inch long; whereas, seeds of flixweed are arranged in a single row along a pod that is typically 1 to 1 ½ inches long.

Yield loss potential: No specific information is available at this time.

Herbicide resistance: No resistant biotypes have been reported.

Figure 24.30. Tansymustard. (Photos courtesy of Mike Moechnig, SDSU)

Additional plant identification information and references

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